



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,782	12/12/2001	Stephen Memory	665.00947	9531

7590 08/24/2004

WOOD, PHILLIPS, VAN SANTEN, CLARK & MORTIMER  
SUITE 3800  
500 WEST MADISON STREET  
CHICAGO, IL 60661

EXAMINER

DUONG, THO V

ART UNIT PAPER NUMBER

3743

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/020,782	Applicant(s) MEMORY ET AL.	
	Examiner Tho v Duong	Art Unit 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 8, 13-20 and 23-35 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 and 24-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8, 13, 20 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Receipt of applicant amendment filed 5/13/2004 is acknowledged. Claims 8, 13-20, and 23-35 are pending. Claims 14-19 and 24-35 have been withdrawn from further consideration since these claims are directed to the non-elected species.

#### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8 and 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 7 of copending Application No. 10/013018. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application would clearly anticipate the claims in the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application

Art Unit: 3743

since the referenced copending application and the instant application are claiming common subject matter, as follows: a plurality of spaced row flattened tubes defining aligned tube runs in each row; serpentine fins abutted to adjacent tube runs in each row; fin is common to each of the row and having slits at a location in space between the aligned tube runs in each row wherein the slit is formed by absence of the removal of any material; and the aligned tube runs being connected in hydraulic series (instant application). These subject matter corresponds to the subject matter that a plurality of flattened cross section tubes spaced in side by side relation, each of the tube being folded upon itself to define at least two parallel legs of the tube so that the working fluid flows serially through at least two parallel fluid passes from one of the header to the other; serpentine fins extending between adjacent pairs of the tubes with a transverse width extending across the at least two parallel legs of the adjacent tubes; separation such as slits located between the parallel legs of the adjacent tubes wherein slits are formed without the requirement of removing any fin material.

Claim 13 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 7 of copending Application No. 10/013018 in view of Waldorf (US 4,688,394). The copending application discloses that heat exchanger is provided in a transcritical cooling cycle but not specifically to a refrigeration system contains a compressor, an evaporator connected to an inlet of the compressor and a gas cooler fore receiving compressed refrigerant from the compressor. Waldorf discloses a transcritical cooling system that includes a compressor (11); an evaporator (13) connected to an inlet of the compressor and a gas cooler (15) for receiving compressed refrigerant from the compressor for the purpose of conditioning the air that circulates into the passenger compartment

Art Unit: 3743

of a car. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Wardorf's teaching in the copending application for the purpose of conditioning the air that circulates into the passenger compartment of a car.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8,13,20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino et al. (US 5,531,268) in view of Stoynoff (US 2003/0075307A1). Hoshino discloses (figures 1 and 2) a heat exchanger used as an evaporator or a condenser in a car air conditioner which is well known in the art as a refrigeration system including compressor and transcritical refrigerant, the heat exchanger having a front and a back, a plurality of spaced rows of flattened tubes (1) from front to back and defining aligned tube runs (2,3) in each rows; serpentine fins (12) abutted to adjacent tube runs; and the aligned ones of the tube runs being connected in hydraulic series. Hoshino does not disclose that the fins are common to each of the rows and to have slit without removal of any material from the fin.

Stoynoff et al. discloses (figures 1 and 2) a heat exchanger comprising a plurality of spaced apart tubes (14,32) wherein fins (16,34) are common in each row of tubes and separated the first tube run from the second tube run by slits (50) formed without removal of any fin material for the purpose of minimizing heat conduction between two tube runs and facilitating

Art Unit: 3743

assembly. Since Hoshino and Stoynoff are both from the same field of endeavor and/or analogous art, the purpose disclosed by Stoynoff would have been recognized in the pertinent art of Hoshino. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Stoynoff's teaching in Hoshino's device for the purpose of minimizing heat conduction and facilitating assembly as recognized by Stoynoff.

Claims 8,13,20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino et al. (US 5,531,268) in view of Martin et al. (US 6,502,305). Hoshino discloses (figures 1 and 2) a heat exchanger used as an evaporator or a condenser in a car air conditioner which is well known in the art as a refrigeration system including compressor and transcritical refrigerant, the heat exchanger having a front and a back, a plurality of spaced rows of flattened tubes (1) from front to back and defining aligned tube runs (2,3) in each rows; serpentine fins (12) abutted to adjacent tube runs; and the aligned ones of the tube runs being connected in hydraulic series. Hoshino does not disclose that the fins are common to each of the rows and to have slit without removal of any material from the fin. Martin further discloses (figures 1 and 5) a heat exchanger module (1,2) having a front and a back; a plurality of spaced rows of flattened tubes (5,10) from front to back and defining aligned tube runs in each row; fins (30) abutted to adjacent tube runs in each row and extending from front to back so that each fin is common to each of the rows and slits (22) extending completely through the fin at a location in the space between the tube run. Martin further discloses (column 4, lines 5-15) that the slits (22) are formed without removal of any fin material. The motivation to combine the Hoshino and Martin is clearly stated in column 1, lines 37-47 that a heat exchanger with common fins such as common fins (30) would simplify the manufacture and make the heat exchanger more compact

Art Unit: 3743

and furthermore to minimize the heat transfer between various heat-exchange region of the fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Martin's teaching in Hoshino's heat exchanger to simplify the manufacture and make the heat exchanger more compact.

Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldorf (US 4,688,394) in view of Martins (US 6,502,305). Waldorf discloses (figures 1, 2 and column 3, line 25- column 4, line 8) a motor vehicle air conditioner including a heat pump system (36) wherein the heat pump system having a compressor (11) for compressing a refrigerant; an evaporator (13) connected to an inlet of the compressor, a gas cooler (15,26) for receiving compressed refrigerant from the compressor in a cooling mode. Waldorf further discloses (figure 2, dashed lines) that in a heating mode, the gas cooler is an evaporator and the evaporator is the gas cooler. Waldorf does not disclose the details of the gas cooler (15,26). Martin discloses (column 1, lines 31-37) a compact gas cooler, which is used in a motor vehicle air conditioning system. Martin further discloses (figures 1 and 5) a compact gas cooler including a heat exchanger module (1,2) having a front and a back; a plurality of spaced rows of flattened tubes (5,10) from front to back and defining aligned tube runs in each row; fins (30) abutted to adjacent tube runs in each row and extending from front to back so that each fin is common to each of the rows and slits (22) extending completely through the fin at a location in the space between the tube run. Martin further discloses (column 4, lines 5-15) that the slits (22) are formed without removal of any fin material and each edge of the slits is not displaced with respect to opposite edge of the slit in an off plane direction. The motivation to combine the Waldorf and Martin is clearly stated in column 1, lines 37-47 that a gas cooler with common fins

Art Unit: 3743

such as common fins (30) would simplify the manufacture and make the gas cooler more compact and furthermore to minimize the heat transfer between various heat-exchange region of the fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Martin's gas cooler in Waldorf to simplify the manufacture and make the gas cooler more compact.

### ***Response to Arguments***

Applicant's arguments with respect to Hosino et al have been fully considered but they are not persuasive. Hoshino et al. claims a final product, not a product by process not or method of manufacturing a product nor a method of manufacturing a product. Although Hoshino et al. discloses a desired method of manufacturing a product does not detract from the fact that the final product produced. The combination of Hoshino et al. and Martins or Stoynoff would produce a Final product structurally meeting the claimed invention. With respect to MPEP 2143.01, the proposed modification does not change the principle of operation of Hoshino et al. of exchanging heat, and the proposed modification does not render the prior art of Hoshino et al. unsatisfactory for its intended purpose as a heat exchanger. Applicant's argument might have had merit in a product by process of method of manufacturing claim, but the claimed invention is a product. With respect to applicant's argument about the motivations for combining Hoshino and Martin or Stoynoff, the examiner agrees with the applicant that in aspect of the thermal conduction, separated fins would result less thermal conduction than Martins or Stoynoff's fins. However, the motivation is the combination of two aspects the heat exchanger, which are the advantage of using one common fin over two separated fins while keeping the heat conduction between two adjacent tube in each row of tubes minimum. If cost of labor for assembling and



Art Unit: 3743

handling the heat exchanger weights more in design consideration than the cooling performance, the teaching of Martin or Stoynoff is the best choice to achieve both aspects of the heat exchanger.

As regarding applicant's argument that nothing in either Hoshino or Martins supports the motivation of "make the heat exchanger more compact", what was intended by this statement was that the number of separated parts for forming a heat exchanger is significant reduced by using one common fin as taught by Martins or Stoynoff.

Applicant's arguments with respect to Waldorf and Martin has been fully considered but they are not persuasive. The examiner must interpret the claims as broadly as their terms reasonably allows. The gas cooler can be interpreted to be a heat exchanger that comprises two heat exchange modules (15,26), which has the heat exchange module (15) of the gas cooler receiving the compressed refrigerant from the compressor. Furthermore, the reference of Waldorf is relied to show a refrigeration system that has a gas cooler, wherein the reference of Martin discloses the details of the gas cooler as claimed. With respect to applicant's argument about the motivation of minimizing heat conduction between various heat exchange regions defeating the purpose of the structure shown in Waldorf, the examiner disagrees. Waldorf discloses (column 3, line 24- column 4, line 8) that the heat exchange region (15) picks up heat from the heat exchange region (26). However, Waldorf does not teach away of any possibility of having a common fin extending between two heat exchange regions. Since each heat regions (15) and (26) operate at different temperatures, it is necessary to minimize a heat conduction that leads to a common operating temperature for both heat exchange regions. As far as the Wardorf's disclosure concerns, the heat exchange region (15) is designed to pick up heat from

Art Unit: 3743

the heat exchange region (26) by placing them adjacent to each other and heat may be transferred to the heat exchange regions by convection. Wardorf does not appear to encourage that the larger amount of heat is transferred by thermal conduction between two heat exchange regions, the better the heat exchange module becomes.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703) 305-0768. The examiner can normally be reached on from 9:30-6 PM.

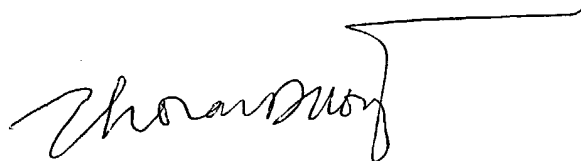
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



TD

August 20, 2004



Tho Duong

Patent Examiner.